

COST Action TD1105

1st EuNetAir Air Quality Joint-Exercise Intercomparison

Sensors versus Analyzers for Air-Pollution Monitoring in Aveiro City

Institute for Environment and Development - IDAD
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Microsensor Box for Physical and Chemical Weather Monitoring



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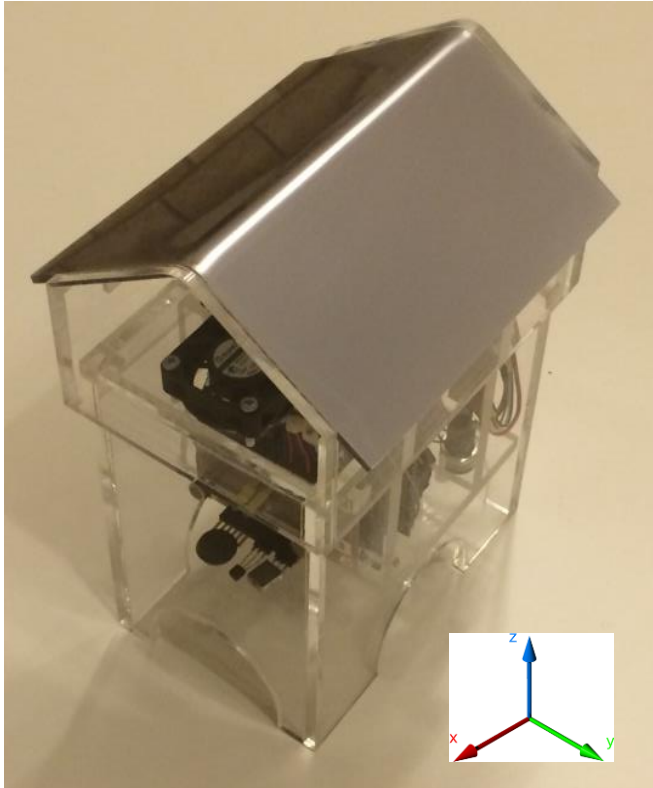
MC Member, WG2&3 Member, Sub-WG 3.2 Leader (Air-quality modelling and chemical weather forecasting)

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Scientific context and objectives

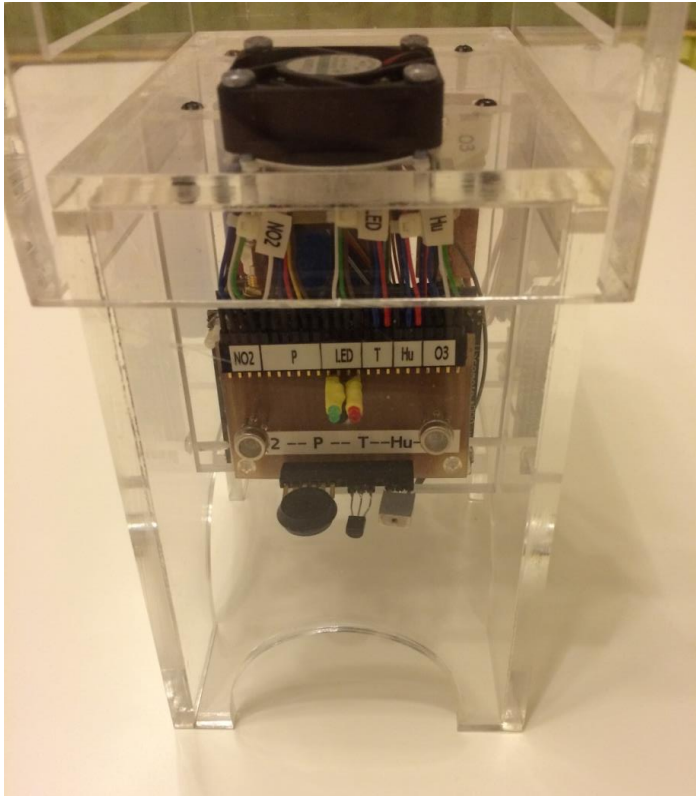
- **Background / Problem statement:**
- Monitor physical and chemical weather parameters with low-cost commercial sensors
- Development of a portable, light weight sensor box
- Use of sensor data for modeling, forecasting, and information service provision for quality of life.

DESCRIPTION of Sensor-System to be Used in Exercise



- **Temperature:** MCP9700A sensor, [-40°C ,+125°C]
- **Atmospheric pressure:** MPX4115A sensor, [15, 115kPa]
- **Humidity:** 808H5V5 sensor , % RH
- **NO₂:** MiCS-2710 sensor ,
 - Ppm: [0.05, 5], μg/m³: [94, 9400]
- **O₃:** MiCS-2610 sensor
 - ppb: [10, 1000], μg/m³: [20, 2000]
- Wasmote and homemade boards used
- Sensors programmed to receive one measurement every 5 minutes and fall into sleep mode to avoid excessive signal noise.
- Sensor consumption during measurement: 150 mA
- Fan consumption: 170 mA

DESCRIPTION of Sensor-System to be Used in Exercise



- Sensor Technologies to be used and their Principle of Operation
 - Physical weather: analog sensor principle (piezoresistive transducers)
 - Chemical weather: resistive sensor principle
- Expected Results
 - Calibration
 - Limit of detection
 - Power consumption
 - Signal noise identification

CONCLUSIONS

- Calibration of sensor box
- Intercomparison with all other available measurements to identify
 - Measurements profiles as a function of sensor technologies
 - Potential for data-oriented modelling and forecasting
 - Use of sensor data for environmental information service design